An Innovative Off-Campus Infusion Suite Designed to Improve Experiences of Patients With Cancer

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The Brooklyn Infusion Center of Memorial Sloan-Kettering Cancer Center was established in 2010 to better meet the needs of patients with cancer living in the Brooklyn neighborhood and surrounding areas. A multidisciplinary team comprising clinical, administrative, planning, and other representatives were charged to identify and develop a location that would provide oncology care for patients closer to home and improve the patients’ experience. The primary objectives were to provide patient-centered care that accommodates the patients’ preference to receive treatment closer to home and to take advantage of technology to establish processes that will provide safe, efficient, convenient, and high-quality care in a cost-effective manner. To achieve these objectives, no laboratory processing or pharmacy services were included in the plan for the Brooklyn location. This allowed the elimination of most of the challenges involved with same-day blood draws and chemotherapy orders. In addition, computer technology is used for teledermatology and other medical visits to maintain the continuity of the patients’ care with their multidisciplinary teams at the Manhattan, NY, location. The data presented will illustrate how these processes have improved patients’ experiences by reducing wait times for treatment, providing treatment closer to home, and implementing a truly patient-centered nursing care model.

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Demand for oncology services is expected to rise rapidly, driven by the aging and growing population in the United States and improvements in cancer survival rates (Erikson, Salsberg, Forte, Bruinooge, & Goldstein, 2007). In 2010, 96,941 patients were treated with outpatient chemotherapy at Memorial Sloan-Kettering Cancer Center (MSKCC), compared with 93,184 patients in 2009. The increasing number of patients receiving chemotherapy challenged the capacity of the existing physical space and created long wait times for patients. The typical MSKCC patient receiving chemotherapy in an outpatient setting waited an average of 72 minutes to receive treatment in 2009 and 71 minutes in 2010. In addition to the wait times, some patients had to travel long distances to receive treatment and incur the exorbitant costs associated with commuting to, and parking in, New York City. The wait time and expense to commute added to the physical and emotional strain of their disease and created additional stress for the patients and their caregivers.

The primary objectives of a new location were twofold: to provide patient-centered care that accommodates the patients’ preference to receive treatment closer to home and to take advantage of the latest technology to establish processes that will provide safe, efficient, convenient, high-quality patient care in a cost-effective manner. The 7,745 square foot MSKCC Brooklyn Infusion Center (BIC) (see Figure 1) was established in September 2010 and is located six miles from the MSKCC Manhattan location. The center operates six days per week, Monday through Saturday, from 8 am–6 pm. (Although few places offer chemotherapy on Saturday, BIC had to offer this to be consistent with the next-day treatment process.) BIC has 12 private treatment suites, an indoor garden, and an art gallery. Because the location has no laboratory processing or pharmacy services, dedicated drivers transport specimens and prepared medications between BIC and the Manhattan campus several times daily. Nursing staff collaborated with the Department of Medicine to determine clinical eligibility criteria, and...
pharmacy staff were consulted to determine eligible drug preparations based on stability. Eligible patients for the BIC are adults receiving standard, noninvestigational treatment, and include all patients with solid tumors, lymphomas, myelomas, and neurologic issues. The clinical services offered at BIC are chemotherapy and biotherapy infusions and other services, such as administration of supportive medications, hydration, injections, vaccines, disconnection of IV devices, laboratory specimen collection, and maintenance of vascular access devices. Emergencies are handled by the on-site NPs and an emergency medicine physician. Patients requiring additional emergency management are transferred to a local emergency room or to the Manhattan campus’ Urgent Care Center.

**Staffing Model**

Based on the expected chemotherapy patient volume of 30 patients undergoing chemotherapy treatment daily, the staff comprised one nurse leader (NL), three RNs, and two nurse practitioners (NPs). Because of an interest in developing new models of cancer care delivery, the NL, staff RN, and NP roles were modified to incorporate additional tasks and responsibilities that contribute to the efficient and cost-effective delivery of care at BIC. The nursing roles at BIC are unique and differ dramatically from other nurses at MSKCC with similar job titles. The role of the NL includes the customary nurse manager administrative and management functions but also direct patient care. The RN role includes not only the administration of chemotherapy and patient care, but was expanded to include telephone symptom assessment and triage which, typically, has been the responsibility of the primary oncologist's office practice RN. At each chemotherapy administration location, MSKCC has a verification nurse whose main responsibility is to confirm that all electronic chemotherapy orders entered by physicians are accurate and complete prior to the pharmacist preparing the drug. At BIC, the responsibilities of this exclusive assignment have been incorporated into the chemotherapy RN role. NPs at the other MSKCC chemotherapy locations do not administer chemotherapy. However, as a part of the cost-conscious design for BIC, NPs' primary role is chemotherapy administration. The NPs were trained according to the same standard for any nurse providing chemotherapy at the institution. As required by the Center for Medicare and Medicaid Services (CMS), the NP also serves as the on-site licensed independent practitioner. In addition to the NP, a physician is on site at all times while chemotherapy is being administered. The physician assignment is a shared role, rotated among the physicians working at the MSKCC Urgent Care Center. Although the presence of the NP is enough to satisfy CMS requirements, the MSKCC Department of Medicine decided to remain consistent with the institutions’ standard of having physician-supervised chemotherapy.

In addition to the nursing staff, two administrative staff members are present and carry out all clerical tasks, patient scheduling, patient recruitment, and the ordering and stocking of medical supplies. Two couriers are responsible for transporting specimens and drugs between the main campus and BIC daily. Two pharmacists at the main campus are dedicated to preparing the chemotherapy and other drugs for patients at BIC.

**The Chemo Ready Model**

To decrease costs, on-site laboratory and pharmacy services were eliminated. This Chemo Ready Model was one of many innovative work flow processes used at the Manhattan outpatient location to reduce wait times for patients receiving chemotherapy. Patients can choose to participate in the Chemo Ready Model option or not. For this process, a nurse collaborates with the multidisciplinary team and the patient to ensure that all prechemotherapy requirements are completed at least 24 hours in advance of the patient’s arrival for their chemotherapy appointment. Those requirements include the performance of the patient’s laboratory testing, the physician's electronic chemotherapy order entry, and the nurse reviewing laboratory results and contacting the patient to conduct a symptom and toxicity assessment. To accommodate patient preference, patients who do not have a physician appointment the day prior to chemotherapy can have their laboratory specimens collected at BIC or at any local laboratories that MSKCC partners with. The local affiliated laboratories have the ability to interface directly with MSKCC electronic medical records.

A nurse reviews laboratory results and the symptom and toxicity assessment to determine whether the patient meets the chemotherapy order parameters. When the criteria are not met, the nurse consults with the medical oncologist to modify the plan of care accordingly. Finally, when all criteria are in order, the nurse sends an electronic prompt to the pharmacy to prepare the drug for the next day. With all those important prerequisites accomplished well in advance of the patient’s arrival, a smooth, delay-free visit is likely. In the ambulatory chemotherapy setting, wait times of patients choosing to participate in the Chemo Ready Model were reduced by as much as 65% (from 77 to 27 minutes) (Gordon, 2010). Some drawbacks with the Chemo Ready Model were experienced at the Manhattan location, largely related to the
lack of space and nurse availability. Although the chemotherapy treatment was prepared and waiting for the patient at arrival, a treatment suite and/or a nurse were not always available. Also, interested patients had to agree to an additional appointment to have their blood drawn the day prior to chemotherapy. For this reason, some patients chose not to participate.

At BIC, exclusion of on-site laboratory and pharmacy services required that every patient participate in the Chemo Ready Model. To implement a true Chemo Ready Model, the BIC appointment schedule was designed to ensure that a nurse and treatment suite would be available for each patient. Since the chemotherapy drugs are transported by courier from Manhattan to Brooklyn, nursing and pharmacy personnel collaborated to review potential drug stability and transport issues, which were easy to solve with coordination and advanced planning. Implementation of these steps would prevent or significantly decrease patient wait times by eliminating same-day laboratory and ordering processes (see Figure 2). The Chemo Ready Model provides a good example of how successful multidisciplinary coordination can improve the overall patient chemotherapy experience and result in greater patient satisfaction and improved quality of life.

The Use of Technology to Facilitate Care

Kiosk technology was installed, allowing patients to self-register and expedite the registration process. In addition, computer-facilitated language and interpreter assistance and telemedicine visits were incorporated to improve the delivery of patient care.

A mobile computer cart was created by the institution’s information systems staff to support language translation. The mobile cart, which includes a computer screen and high-resolution camera, allows a clinician to obtain real-time audio and video translation services for the patient and caregiver. The same computer includes a camera that facilitates telemedicine-type visits between the physicians at the Manhattan campus and BIC. This gave staff the opportunity to evaluate the value of telemedicine appointments for dermatology conditions, particularly those associated with chemotherapy reactions. A dermatologist on the main campus conducts the “visit.” The BIC nurse performs the assessment and, using the camera, ensures adequate visualization of the patient’s skin for the remote dermatologist. The telemedicine visit allows early assessment and intervention, therefore decreasing the likelihood that the patient’s treatment schedule will be interrupted. Although only a few patients have required a dermatologic evaluation since BIC opened, surveys conducted to assess the patients’ perception of this “visit” indicate that the patients were satisfied with their experience and did not feel they would have received better care if seen in person (Gordon, 2011). The clinicians felt that telemedicine expedited and improved the care the patient received. To date, the telemedicine visits continue to be evaluated.

To ensure that patients at BIC had access to the same support services as the patients at the Manhattan campus, “virtual visits” for ancillary services were implemented. In collaboration with the Departments of Social Work, Nutrition, and Chaplaincy, procedures were established to support professional interactions between patients and staff from these departments. The staff from these departments were enthusiastic about participation and were provided the equipment and education to conduct the visits. The virtual visit occurs by way of the patient’s chair-side interactive computer, which is equipped with Skype™, a free software application that allows voice and video calls over the Internet. For security, patients and clinicians using this technology are located in private areas, nothing is recorded or can be stored on a local workstation, nor can anyone listen in on the call. Although the capability exists, few patients have taken advantage of this option and prefer to see these professionals while in Manhattan during a medical oncologist visit.

Incorporating Integrative Medicine Into Nursing Care

Technologic innovation, although very useful, will never replace the need for holistic care. Because cancer affects a person’s mind, body, and spirit, the decision was made to educate all BIC nursing staff in the integrative therapies of Reiki, acupressure, and relaxation techniques. These therapies are offered to interested patients during their chemotherapy or infusion treatment. The NL, RNs, and NPs received this training through the institution’s Integrative Medicine Department. Reiki, a Japanese technique for stress reduction and relaxation, also promotes natural healing through the laying on of hands. Reiki purports to transfer universal energy through the practitioners to the receivers of the therapy (Whelan & Wishnia, 2003). Acupressure is an ancient healing art that uses the fingers at key points to stimulate the body’s natural self-curative abilities. The technique is simple and patients can be taught to perform on themselves as the acupoint commonly used for chemotherapy-induced nausea and vomiting (CINV) is easily accessible on the inner wrist. Used in conjunction with current antiemetic drugs, acupuncture and acupressure have been shown to be safe and effective for the relief of CINV (Collins & Thomas, 2004). The Department of Integrative Medicine also has assigned an acupuncturist to this location once a week to provide patients and caregivers with acupuncture treatment for a nominal fee. In addition, integrative medicine practitioners also taught the nurses how to teach relaxation techniques such as deep breathing and guided imagery—all easy interventions for nurses to provide to a patient during chemotherapy treatment. Reiki also is beneficial to the therapy provider who may experience a sense of relaxation while administering a Reiki treatment (Whelan & Wishnia, 2003).

Challenges

Planning Teams

Opening a new and innovative location is an exciting endeavor; however, it can be accompanied by challenges. Organizational culture must be considered when implementing any new program. The site planning team included patients and representatives from administration, strategic planning and innovation, and the departments of Nursing, Medicine,
Is the patient’s appointment with the medical oncologist the day prior to chemotherapy?

Yes

Patient arrives for the medical oncologist visit at the Manhattan location.

Are blood tests needed?

Yes

Patient goes to phlebotomy laboratory to have blood work done.

No

Visit with medical oncologist and office practice nurse

Oncologist proceeds with chemotherapy based on examination and laboratory results?

Yes

Patient is scheduled for chemotherapy at BIC and electronic chemotherapy orders are entered by a medical oncologist.

No

Discuss with medical oncologist

Modify plan of care accordingly

No

Is patient to receive treatment?

Yes

Modify chemotherapy treatment plan and keep BIC appointment.

No

Cancel treatment

Laboratory results within chemotherapy treatment parameters?

Yes

Patient contacted by BIC nurse via phone to complete and verify unchanged symptoms or toxicity assessment and confirm appointment.

No

Okay to proceed based on symptom toxicity assessment?

Yes

Drug prepared and delivered to BIC by messenger for the scheduled chemotherapy appointment

Patient arrives at BIC to be treated. Room, nurse, and drug all are available at arrival.

No

Are blood tests needed?

Yes

Patient has blood drawn at BIC?

Yes

BIC nurse, in person, conducts symptom and toxicity assessment.

No

Patient has blood drawn at other location.

Assessment within normal limits?

Yes

BIC RN informs patient he or she will receive a call once the laboratory results are available.

No

Patient has blood drawn at other location.

FIGURE 2. Workflow for a Patient Within the Brooklyn Infusion Center (BIC) Framework
and Pharmacy. All are key stakeholders and their participation was encouraged throughout all phases of planning and development. Updates were provided frequently to the various multidisciplinary teams. Prior to opening, a series of meetings were held to educate all clinicians and administrative staff about the model and the location-specific processes. Those presentations included discussions about patient eligibility criteria, scheduling procedures, and the role of the clinicians and the clerical staff when referring patients to BIC. Despite these efforts, the project was met with some opposition related to an unclear understanding of the overall goals and purpose of establishing a Brooklyn location. Following the physician visit, clerical personnel were allowed to offer eligible patients the option to receive treatment at BIC without physician approval. Lack of communication to the physician regarding their patients’ choice proved to be a major source of dissatisfaction for the physicians. Once recognized, the planning team immediately corrected the information flow and implemented an e-mail process to make physicians aware of their patient’s preference to receive treatment at BIC. Other physician concerns were related to the distance from the Manhattan campus. Some physicians preferred that their patients be treated in proximity to where they practice and, therefore, were reluctant to send patients to BIC. The physicians were reassured that their primary role as attending physician would not change despite the patient’s treatment location. The presence of the urgent care physician at the BIC for emergencies was reiterated. In addition, to establish trust and build confidence, the RNs and NPs at BIC worked diligently to create effective relationships with the various disease management teams. Clinical and administrative staff also were invited to visit BIC to see that it was developed to be a patient-centered environment and to facilitate effective nursing workflow.

Patient Recruitment

Patient recruitment continues to be a challenge because treatment location is dependent on patient preference. Similar to the staff, patients also were reluctant to take advantage of the site for various reasons. Despite being closer to home with new amenities and minimal wait time, some patients still preferred to receive treatment in Manhattan. The mandatory day before blood draw visit was unappealing to some patients, and they would opt for treatment in Manhattan. Initially, a strong preference arose that patients should receive all their treatment in Manhattan or at BIC and not be permitted to alternate between sites. Many patients stated that this was most inconvenient when they were scheduled to see their physician in Manhattan one day and required to go to BIC the next day for chemotherapy. Patients wanted the option to coordinate their physician visit with chemotherapy in Manhattan and to receive chemotherapy at BIC on the non-physician visit days. This was an early change made by the planning team to accommodate patient preference and increase patient satisfaction. Staff learned the importance of engaging and listening to all stakeholders, including patients, during the planning, implementation, and evaluation phases as their input is critical to the success of the project.

Implications for Practice

> The experience of patients and nurses is positively influenced when oncology nurses are able and encouraged to provide conventional and holistic nursing care to their patients.

> The Chemo Ready Model in the satellite setting allows nurses a degree of autonomy that is not experienced in other settings.

> Experienced oncology nurses providing care in a satellite setting offers added value to patients by providing safe, convenient, and efficient oncology care closer to the patients’ homes.

Patient Satisfaction Results

Five months after opening, a marketing research survey was initiated to understand and evaluate patients’ overall experiences at BIC. The anonymous survey was offered in paper and online formats and was available in English and Russian, as these are the primary languages of the patients served. Eligible participants included any patient who had at least one visit to BIC. Some patients were asked to complete the survey during their visit, whereas others completed the survey electronically or by mail using the postage-paid return envelope. A total of 242 surveys were distributed and 103 completed surveys were returned during an 11-week period, a 42% response rate. Overall, the majority of the patients (85%) were “extremely satisfied” with their experience at BIC, and 13% reported being “satisfied.” When asked about the factors that influenced their decision to receive treatment or services at BIC, 79% noted the location of the facility as the reason for their change. Eighty-eight percent responded that they “definitely would recommend” BIC to other patients who need chemotherapy, and 7% said they “would.” When asked about wait times before treatment, 67% of patients responded, “I did not wait at all,” whereas 29% responded, “It was an acceptable amount of time to wait.” Respondents were encouraged to add comments in a free text area of the survey. Patients often wrote the words “peaceful,” “calm,” “quiet,” “beautiful,” and “professional” to describe their BIC experience.

Patients who were treated at BIC experienced minimal wait times compared to those treated at other ambulatory sites. To date, the average wait time for 2011 for a patient at a Manhattan ambulatory site was 66 minutes compared to 1 minute at BIC.

The survey demonstrated that the primary goal of improving the patients’ experience had been accomplished. The positive survey results were shared with the MSKCC physicians and other staff and the data gave them the confidence to refer their patients to BIC for chemotherapy and other services.

Conclusion

Nurse participation in the design of a chemotherapy infusion site was essential to ensuring a patient-centered environment and a satisfying work atmosphere for the nurses. The use of new and innovative technologies to provide a safe, comfortable patient experience and efficient workflow in a cost-conscious
manner is essential in this era of healthcare reform. BIC has been open for about two years, and early indicators reveal that the Chemo Ready Model and BIC workflow processes have truly created a patient-centered environment. By offering treatment closer to home, eliminating wait times, offering integrative therapies during treatment, and having experienced oncology nurses and a physician on site, a safe, convenient, and comfortable experience is ensured for each patient. The site not only equates to greater patient satisfaction, but also contributes to an improved quality of life, which is an important desire of every patient with cancer and their loved ones.

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References


For Exploration on the Go

Blogger Jessica Wapner describes her visit to the Brooklyn Infusion Center in her Work in Progress forum. Read this patient’s testimonial by opening a barcode scanner on your smartphone. Point your phone at the code and take a photo. Your phone will link to the content automatically.


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